Level 1	STEMI PTs w/angiogram, N=2062		
Death	w/CTO N=297	w/o CTO N=1765	p-value
In-Hospital Death, N (%)	39 (13.1)	63 (3.6)	<0.0001
Death in 30 days, N (%)	45 (15.2)	75 (4.3)	<0.0001
Death in 1 year, N (%)	65 (21.9)	133 (7.5)	<0.0001
Level 2	**NSTEACS PTs w/angiogram, N=827**		
Death	w/CTO N=203	w/o CTO N=624	p-value
In-Hospital Death, N (%)	11 (5.4)	10 (1.6)	0.0027
Death in 30 days, N (%)	14 (6.9)	13 (2.1)	0.0008
Death in 1 year, N (%)*	11 (9.5)	25 (6.4)	0.2647
*N=504 for 1 year (excluding 2012)			

Conclusions: Our data demonstrates that PTs with STEMI and a CTO have higher in-hospital, 30 day, and one year mortalities than STEMI PTs without a CTO. PTs with NSTEACS and a CTO have higher in-hospital and 30 day mortality than NSTEACS PTs without a CTO, and there is a non-significant trend towards increased one year mortality for PTs with a CTO. Strategies to reduce this increased mortality are needed.

TCT-371

Impact of Chronic Total Occlusions on Mortality in Patients Presenting With Cardiac Arrest

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Background: Cardiac arrest (CA) is often the result of both acute and chronic coronary artery disease (CAD) particularly when it is caused by ventricular tachycardia or fibrillation (VT/VF). Therapeutic hypothermia has been shown to decrease mortality and after resuscitated CA (rCA). It has been demonstrated that a chronic total occlusion (CTO) in the non-infarct artery in patients (Pts) with ST segment elevation myocardial infarction (STEMI) is associated with increased mortality. The incidence and effect of CTOs in Pts with rCA has not been well described. Further the incidence and effect of CTOs in rCA Pts as the result of STEMI is unknown.
Methods: The Minneapolis Heart Institute has developed formalized protocols for both STEMI (Level One, L1) and cardiac arrest and sequential therapeutic hypothermia (Cool-It). From 2006-May 2012, 164 sequential Pts who had been enrolled in the Cool-It program who presented with VT/VF and underwent angiography were evaluated for the presence of at least one CTO in a major coronary vessel. From 2006-May 2012, 121 PTs who had been enrolled in the Cool-It program and underwent angiography but also suffered from STEMI were also evaluated for CTOs. In-hospital, 30 day, and 1 year mortality were compared between Pts who did and did not have CTO. STEMI Pts who presented with rCA were compared to STEMI Pts without rCA for the presence of a CTO.
Results: See table below:

Cool-It Pts w/angiogram and VT/VF, N=164			
Death	w/CTO N=37	w/o CTO N=127	p-value
In-Hospital Death, N (%)	15 (40.5)	37 (29.1)	0.1895
Death in 30 days, N (%)	16 (43.2)	40 (31.5)	0.1848
Death in 1 year, N (%)	17 (46.0)	43 (33.9)	0.1792
Cool-It Pts w/angiogram and STEMI, N=121			
Death	w/CTO N=30	w/o CTO N=91	p-value
In-Hospital Death, N (%)	16 (53.3)	33 (36.3)	0.0986
Death in 30 days, N (%)	15 (50)	35 (38.5)	0.2657
Death in 1 year, N (%)	17 (56.7)	37 (40.7)	0.1261
STEMI Pts from 2007-2011, N=2062			
	w/rCA	w/o rCA	p-value
w/CTO, N (% for column)	22 (24.7)	275 (13.9)	0.0046
w/o CTO, N (% for column)	67 (75.3)	1698 (86.1)	

Conclusions: These data demonstrate that rCA Pts presenting with VT/VF and who have a CTO appear to have similar mortality compared to those without a CTO. Pts with and without a CTO who presented with rCA and STEMI have similar mortality although there is a trend in favor of those without a CTO. STEMI Pts with rCA have a higher incidence of a CTO than do STEMI Pts without rCA. Further efforts to understand, treat, and avoid CA in Pts with a CTO are warranted.

TCT-372

"Full metal jacket" (stented length > or = 50 mm) using drug-eluting stents for chronic total occlusive lesions.

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Background: Limited data exists on patients who have undergone drug eluting stent (DES) implantation of long chronic total occlusive (CTO) lesion in native coronary arteries.
Methods: We defined long continuous stent implantation (stent length > or = 50 mm) as "full metal jacket" (FMJ). From April 2007 to March 2013, 344 consecutive patients (361 lesions) who underwent FMJ using any DESs for de novo lesion were enrolled. Subjects were classified into two groups: the patients with CTO lesion (CTO group, 113 patients, 114 lesions) and without CTO lesion (non-CTO group, 239 patients, 247 lesions). The two groups were compared for mean 24±19 months clinical outcomes. Endpoints were freedom from target lesion revascularization (TLR) and major adverse cardiovascular events (MACE) defined as composite of TLR, myocardial infarction and all cause death at 5 years after percutaneous coronary intervention procedure. This was a single center non-randomized retrospective study.
Results: CTO group was younger than non-CTO group (66.0±0.9 vs. 70.0±0.6, p<0.05). The percentage of male gender and hyperlipidemia were higher in CTO group than non-CTO group (84.2% vs. 69.6%, p<0.05 and 58.8% vs. 47.0%, p<0.05, respectively). There were no significant differences between both study arms in percentages of diabetes mellitus (43.0% vs. 48.6%, p=0.32), hypertension (71.9% vs. 75.2%, p=0.51), hemodialysis (2.6% vs. 5.3%, p=0.26) and current smoker (19.3% vs. 17.1%). Target vessel was more often the right coronary artery in CTO group than non-CTO group (71.1% vs. 33.2%, p<0.05). The mean total length of implanted stents was longer in CTO group than non-CTO group (72.8±1.4 mm vs. 60.9±0.9 mm, p<0.05). Intravascular ultrasound was used in 70.0% and follow up rate of angiography was 75.9%. Regarding the long-term clinical outcomes, there were no significant differences in the rate of freedom from TLR (60.5±10.5% vs. 76.9±4.7%, Log rank p=0.48) and MACE (53.8±9.9% vs. 67.2±4.8%, Log rank p=0.88) at 5 years estimated using the Kaplan-Meier methods compared to non-CTO group.
Conclusions: The strategy of FMJ using DES was acceptable for CTO lesions.

TCT-373

Decreasing R-wave Amplitude During Percutaneous Coronary Intervention for Chronic Total Occlusion in the Retrograde Approach

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Background: The use of retrograde approach for recanalization of chronic total occlusion (CTO) has been established with improved success rates. During the procedure of percutaneous coronary intervention (PCI) for CTO lesions in the retrograde approach, electrocardiographic R-wave amplitudes often decrease in many leads. Because the differential diagnoses of low voltages on electrocardiogram (ECG) include pericardial effusion, the presence of these changes should increase the index of suspicion for a significant pericardial effusion due to coronary perforation and prompt further evaluation such as echocardiography.
Methods: We analyzed the recent 30 patients (group-R, age 65±12) who underwent successful PCI for CTO lesions in the retrograde approach and the recent 30 patients (group-E, age 60±10) who underwent treatment for pericardial effusion during catheter intervention. Group-E was divided into 2 groups according to whether requiring drainage of effusion [group-E/D(+) ,n=15] or not [group E/D(-), n=15]. Pre-ECG was defined as the ECG just before the catheter intervention. Post-ECG was defined as the ECG just before the procedure of drainage for Group-E/D(+) and the ECG immediately after catheter intervention for other groups.
Results: In comparison of pre-ECG and post-ECG, the leads in which R-wave amplitude significantly decreased were I, II, aVL, V1,V4, V5, and V6 in group-R; I, II, aVL,V4, V5, and V6 in group-E/D(+); but only aVL in group-E/D(-). Heart rate (HR) significantly increased in group-E /D(+) (64±12 to 83±18, p=0.0034) between the 2 ECGs, but not in group-R and group-E/D(-). Comparing group-R and group-E/D(+), the rate of R-wave amplitude between the 2 ECGs [(R-wave amplitude in post-ECG)/(R-wave amplitude in pre-ECG)] was similar in all leads. But the rate of HR between the 2 ECGs [(HR in post-ECG) / (HR in pre-ECG)] was higher in group-E/D(+) (0.96±0.34 vs 1.32±0.29, p=0.0024). Comparing group-R and group-E/D(-), the rate of HR between the 2 ECGs was similar. But the rate of R-wave amplitudes between the 2 ECGs of group-R was significantly lower in leads I(0.66±0.25 vs 0.99±0.58, p=0.0074), II(0.88±0.33 vs 1.20±0.41, p=0.014), V1(0.72±0.29 vs 1.11±0.55, p=0.0019), and V5(0.67±0.31 vs 0.95±0.30, p=0.0042).
Conclusions: During the procedure of PCI for CTO lesions in the retrograde approach, ECG shows decreasing R-wave amplitudes similarly with the case of pericardial effusion requiring drainage during catheter intervention. However, by taking HR into account, decreasing R-wave amplitude during PCI for CTO lesions in the retrograde approach could be discriminated from ECG changes due to pericardial effusion during catheter intervention.

TCT-374

Results of the ALSTER CTO-OCT registry: Delayed DES endothelialization after subintimal recanalization of chronic of total occlusion: Observation by optical coherence tomography

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